

## REMARKS

Claims 1-2, 5-7, 9, and 11 are pending in the present application. Applicant has amended claim 5 and 6 and has canceled claim 7. No new matter has been added. Claims 5 and 6 were amended to correct incorrect claim dependencies noted by the Examiner.

The Examiner is maintaining the rejection of claims 1-2, 4 and 7-11 under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,462,798 (Kim, *et al.*) in view of U.S. Patent No. 4,917,471 (Takeo, *et al.*). The Examiner also maintained the rejection of claims 5-6 under 35 U.S.C. §103(a) as obvious over Kim in view of Takeo and further in view of U.S. Patent No. 6,275,274 (Kanemori, *et al.*).

In addition, the Examiner is maintaining the rejection of claims 1, 4, 7, and 9-11 under 35 U.S.C. §103(a) as obvious over Kim in view of U.S. Patent No. 4,632,514 (Ogawa, *et al.*). The Examiner also maintained the rejection of claims 5-6 under 35 U.S.C. §103(a) as obvious over Kim in view of Ogawa and further in view of Kanemori.

Applicant urges that independent claims 1 and 9 are not obvious over either Kim and Takeo or Kim and Ogawa for at least the reasons presented below.

At the very least, there is no motivation or suggestion in Kim, Takeo, or Ogawa to combine Kim and Takeo or Kim and Ogawa to produce a liquid crystal display *wherein a B cell gap is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and the B cell gap indicates the thickness of the liquid crystal layer at the region of the blue color filter, wherein the B cell gap, the R cell gap and the G cell gap are differentiated from each other by:  $R \text{ cell gap} - G \text{ cell gap} < G \text{ cell gap} - B \text{ cell gap}$ , and wherein the first and the second opening patterns partition the pixel region into a plurality of micro-domains.*

The Examiner concedes that Kim does not explicitly disclose a display where a B cell gap is differentiated from an R cell gap or a G cell gap, and then cites Takeo and Ogawa as disclosing this feature. Applicant urges, however, that the teachings of these references do

not motivate combining either Kim and Takeo or Kim and Ogawa to produce the synergy achieved by Applicant's claimed invention. The differentiation of cell gap among red, green, and blue pixels and patterning pixel and common electrodes to have opening patterns achieves a synergistic effect not taught or suggested by the cited references. The presence of an unexpected effect that is greater than the sum of effects taken separately is evidence of non-obviousness. (See MPEP 716.02.) The synergy effect is that patterned pixel and common electrodes enhance the effect of cell gap differentiation.

In a liquid crystal display having a wide viewing angle, the light transmission based on voltages varies with wavelength, causing an inter-gray scale color shift, causing white light to appear yellowish. In particular, the B color exhibits a high light transmission at lower gray scales, while the transmission of R and G colors is heightened at higher gray scales. This inter-gray scale color shift can be reduced by differentiating the RGB cell gaps, as explained in Applicant's specification, pages 20-25. The graph of Applicant's FIG. 11 indicates that an R-B cell gap difference of about  $1.25\mu\text{m}$  can eradicate the inter-gray scale color shift, but such a cell gap is difficult to obtain. However, analysis of the V-T graphs depicted Applicant's FIGS. 12A-C and 13 shows that a small cell gap difference of the B color, less than the theoretical gap difference of  $1.25\mu\text{m}$ , can induce a considerable reduction of the color shift. The V-T curve of a multi-domain structure where an opening pattern is present is smoothly elevated compared to a single-domain structure lacking an opening pattern, and has an effect of self-correcting the color shift. The graph of Applicant's FIG. 17 indicates that a B cell gap of  $0.2\pm 0.15\mu\text{m}$  can both significantly reduce the color shift and provide processing efficiency and yield. Accordingly, Applicant's specification provides evidence of unexpected advantageous properties achieved by Applicant's claimed combination *wherein a B cell gap is differentiated from an R cell gap or a G cell gap, . . . wherein the B cell gap, the R cell gap and the G cell gap are differentiated from each other by:  $R \text{ cell gap} - G \text{ cell gap} < G \text{ cell gap} - B \text{ cell gap}$ , and wherein the first and the second opening patterns partition the pixel region into a plurality of micro-domains.* As long as the cited references do not describe any suggestion or teaching to combine them, the Examiner's

assertion is no more than an improper combination based on a hindsight reading of the teachings of the present application. Such combination is improper.

Thus, for the reasons presented above, Applicant urges that independent claims 1 and 9 are not obvious over the combination of Kim and Takeo or Kim and Ogawa. Reconsideration and withdrawal of these section 103 rejections are respectfully requested.

Claims 2 and 11 depend from claims 1 and 9, respectively, and are thus patentable for at least the same reasons as claims 1 and 9. Reconsideration and withdraw of these rejections are respectfully requested.

Claims 5 and 6 depend from amended claim 1. Regarding claim 5, the Examiner cited Kanemori as teaching a display *wherein the micro-domains are classified into left and right domains, and upper and lower domains, the volume occupied by the upper and lower domains being larger than the volume occupied by the left and right domains*, as recited in claim 5. However, for the reasons stated above, Applicant urges that there is no motivation or suggestion in Kim, Takao, or Ogawa to motivate combining Kim and Takao or Kim and Ogawa to achieve the synergistic results discussed above, and further combining Kim and Takao with Kanemori or Kim and Ogawa with Kanemori does not rectify these deficiencies. Thus, Applicant urges that a *prima facie* case of obviousness of claim 5 over either Kim, Takao and Kanemori, or Kim, Ogawa and Kanemori cannot be maintained. Reconsideration and withdraw of these rejections are respectfully requested.

Applicant has amended claim 6 to further recite *wherein a line formed of points that have the same distance from the two neighboring second wiring lines is substantially a straight line*. Applicant urges that this limitation is neither disclosed nor suggested in Kanemori. Thus, Applicant urges that a *prima facie* case of obviousness of claim 6 over either Kim, Takao and Kanemori, or Kim, Ogawa and Kanemori cannot be maintained, since neither combination of references discloses or suggests all claimed limitations of claim 6. Reconsideration and withdraw of these rejections are respectfully requested.

With regard to the Examiner's response to Applicant's arguments, Applicant

reiterates that a dependent claim defines a patentable invention if its base claim does, thus there is no need to present specific arguments opposing a rejection of a dependent claim once arguments have been presented opposing the rejection of the base claim. Thus, the Examiner is being presumptuous in concluding that because Applicant's arguments regarding the base claims are allegedly rebutted, Applicant has acquiesced to the Examiner's specific rejection of the dependent claims.

## CONCLUSION

Applicant urges that claims 1-2, 5-6, 9 and 11, as amended, are in condition for allowance for at least the reasons stated. Early and favorable action on this case is respectfully requested.

Respectfully submitted,

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